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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/761,443	01/21/2004	Timothy P. Weihs	13631-46	3039

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EXAMINER

SCHATZ, CHRISTOPHER

ART UNIT	PAPER NUMBER
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1733

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/06/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/761,443

Applicant(s)

WEIHS ET AL.

Examiner

Christopher T. Schatz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-18, 40-42 and 44-52 is/are pending in the application.
- 4a) Of the above claim(s) 13-17 and 40-42 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 18 and 44-52 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date : 11/28/06. ²⁴

FINAL REJECTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 52 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 52 recites the limitation “a compound having a heat of formation more negative than -30 kJ/mol-atom.” It is unclear to the examiner, based on this language, if applicant is claiming that the *compound* has said heat of formation or if *the reaction* to form said compound has said heat of formation. Based on the applicant’s specification, the examiner believes that applicant fully intended claim that the reaction that forms the compound has a heat of formation more negative than -30 kJ/mol-atom rather than claim the actual compound has a heat of formation more negative than -30 kJ/mol-atom. The examiner respectfully requests applicant amend the claim for clarification purposes.

Double Patenting

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re*

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Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 18 and 44 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 14 and 20 of copending Application No. 10/976877 in view of Makowiecki et al. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the copending application encompass limitations recited in claims 18 and 44 of the instant application. Application No. 10/976877 is silent as to the specific heat of formation of the reaction that causes bonding of the bodies.

Makowiecki et al. discloses a first body bonded to a second body, wherein said bodies are bonded together by a reactive multi-layer foil that is disposed between said bodies and ignited (column 4, lines 14-24), wherein said reactive multi-layer foil has a heat of formation more negative than -30 kJ/mol-atom. A reactive foil with a heat of formation more negative than -30 kJ/mol-atom releases enough energy to cause melting and thus bonding of the bodies (column 3, lines 19-42, column 4, line 15 – column 5, line 25). At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify claims 14 and 20 of Application No. 10/976877 by using Makowiecki et al.'s foil in order to release enough energy during the reaction to cause melting and thus create a high quality bond between bodies.

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This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

5. Claims 18 and 44 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 40-43, 50, and 51 of copending Application No. 10/898650 in view of Makowiecki et al. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the copending application encompass limitations recited in claims 18 and 44 of the instant application. Application No. 10/898650 is silent as to the specific heat of formation of the reaction that causes bonding of the bodies.

Makowiecki et al. discloses a first body bonded to a second body, wherein said bodies are bonded together by a reactive multi-layer foil that is disposed between said bodies and ignited (column 4, lines 14-24), wherein said reactive multi-layer foil has a heat of formation more negative than -30 kJ/mol-atom. A reactive foil with a heat of formation more negative than -30 kJ/mol-atom releases enough energy to cause melting and thus bonding of the bodies (column 3, lines 19-42, column 4, line 15 – column 5, line 25). At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify claims 40-43, 50, and 51 of Application No. 10/898650 by using Makowiecki et al.'s foil in order to release enough energy during the reaction to cause melting and thus create a high quality bond between bodies.

Claim Rejections - 35 USC § 102

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6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 18, 47-49, and 52 are rejected under 35 U.S.C. 102(b) as being anticipated by Makowiecki et al. '944 (of record).

Claim 18 is a product-by-process claim. Applicant is reminded of the office policy regarding such claims: "Product by process claims are not limited to the manipulations of the recited steps, only the structure implied by the steps." See MPEP 2113.

Makowiecki et al. discloses a first body bonded to a second body, wherein said bodies are bonded together by a reactive multi-layer foil that is disposed between said bodies and ignited (column 4, lines 14-24), wherein said reactive multi-layer foil has a heat of formation more negative than -30 kJ/mol-atom (column 3, lines 19-42, column 4, line 15 – column 5, line 25). The product disclosed by Makowiecki et al. is the same as the product claimed by applicant in claim 18. As to claims 44 and 46, Makowiecki et al. discloses a product wherein at least one of the first and the second body comprises a semiconductor (column 3, line 16, lines 51-65). As to claim 47, Makowiecki et al. discloses a first body bonded to a second body by a joining region wherein the joining region comprises a reacted freestanding multilayer foil. Makowiecki et al. meets the limitations of claims 48 and 49 as discussed above. As to claim 52, Makowiecki et al. discloses a first body bonded to a second by joining region comprising a compound having a heat of formation more negative than -30 kJ/mol-atom and a joining material (column 3, lines 19-42, column 4, line 15 – column 5, line 25).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 51 rejected under 35 U.S.C. 103(a) as being unpatentable over Makowiecki et al. as applied above, and further in view of Sindt '402 (of record).

Makowiecki et al. discloses a structure as discussed above, but the reference is silent as to the foil having apertures. Sindt discloses two bodies joined by a bonding foil, wherein said bonding foil 409 comprises openings 411 (figure 10). The openings of the foil allow for direct contact between the two bodies thus producing a better bond (column 4, lines 15-23). At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify Makowiecki et al. such that the reacted foil has openings as taught by Sindt above. Such a modification will produce a more strongly adhered structure.

10. Claims 18, 44-50, and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kashiba et al. '803 in view of Makowiecki et al.

Kashiba et al. discloses a first body 2C bonded to a second body 1, wherein said bodies are bonded together by a reactive multi-layer foil 2a, 21 that is disposed between said bodies and ignited (figures 8a, 8b, columns 12-13). Kashiba et al. is silent as to the specific heat of formation of the reaction that causes bonding of the bodies.

Makowiecki et al. discloses a first body bonded to a second body, wherein said bodies are bonded together by a reactive multi-layer foil that is disposed between said bodies and ignited (column 4, lines 14-24), wherein said reactive multi-layer foil has a heat of formation more negative than -30 kJ/mol-atom. A reactive foil with a heat of formation more negative than -30 kJ/mol-atom releases enough energy to cause melting and thus bonding of the bodies (column 3, lines 19-42, column 4, line 15 – column 5, line 25). At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify Kashiba et al. by using Makowiecki et al.'s foil in order to release enough energy during the reaction to cause melting and thus create a high quality bond between Kashiba et al.'s bodies.

As to claims 44 and 46, Kashiba et al. discloses a product wherein at least one of the first and the second body comprises a semiconductor (column 3, line 16, lines 51-65). As to claim 45, Kashiba et al. discloses materials for the first body 2C and the second body 1 that meet applicant's limitation. As to claims 47 and 52, the combination of references meets the limitations of the claims as discussed above, and Kashiba et al. discloses a first body bonded to a second body by a joining region wherein the joining region comprises a reacted freestanding multilayer foil as discussed in section 7 of the previous office action. Kashiba et al. meets the limitations of claims 48-50 as discussed above.

Response to Arguments

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection. Applicant is respectfully notified that figure of 8b of Kashiba et al. clearly shows that 2C is bonded to 1.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher T. Schatz whose telephone number is 571-272-1456. The examiner can normally be reached on 8:00-5:30, Monday -Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on 571-272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


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